

# **ADDITIVE DELIVERY SYSTEM FOR ROLLSTOCK MACHINES**

Patent Application  
of

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# ADDITIVE DELIVERY SYSTEM FOR ROLLSTOCK MACHINES

## 1    BACKGROUND OF THE INVENTION

### 2    1.    Field of the Invention

3              This invention relates generally to an additive delivery system for rollstock  
4          machines and, more particularly, it relates to an additive delivery system for a rollstock  
5          machine which applies an additive about and to a food product during packaging of the  
6          food product on the rollstock machine.

7

### 8    2.    Description of the Prior Art

9              The use of rollstock machines by food processors to prepare and package food  
10       products for sale to the consumer are known in the art. Rollstock machines typically  
11       include a forming film applied to a conveyor system prior to loading of the food products  
12       with the forming film creating a plurality of cavities for receiving the food product. Once  
13       the food product is loaded into the cavity, a covering film is placed over the loaded food  
14       products. The covering film is then sealed to the forming film to create distinct,  
15       separable food packages. The packages of food product are then separated from each  
16       adjacent food product package.

17             In many instances, the food products must be cooked prior to being sold to the  
18       consumer. Therefore, after the food product has been packaged on the rollstock machine,  
19       the packaged food product can be transported to an oven or the like for cooking. After  
20       the food product has been cooked and since many cooked products, especially processed  
21       meat products, do not have the desired flavor or color, the food processor or operator then  
22       must remove the food product from the film packaging and introduce liquid smoke,  
23       colorant, or other similar additives to the food product. The treated food products are  
24       then transported back to the rollstock machine and repackaged for shipping to the  
25       ultimate consumer.

26             Unfortunately, requiring the operator to package, cook, unpackage, introduce  
27       additive, and repackage is quite time consuming and expensive for the food processor and  
28       the rollstock machine operator. Accordingly, there exists a need for an additive delivery

1 system for rollstock machines which allows an additive to be applied to one or both sides  
2 of the food product during packaging of the food product. Additionally, a need exists for  
3 an additive delivery system for rollstock machines which is securable directly to the  
4 rollstock machine to introduce the desired additive to the food product. Furthermore,  
5 there exists a need for an additive delivery system which is controllable and adjustable  
6 through operation of the rollstock machine thereby allowing a food processor to vary the  
7 amount and type of additive introduced to each food product.

8

9 **SUMMARY**

10 The present invention is an additive delivery system for applying additives to a  
11 food product on a rollstock machine. The rollstock machine has a forming film formed  
12 into at least one cavity with each cavity receiving a food product. The additive delivery  
13 system comprises a first additive delivery device secured to the rollstock machine and a  
14 second additive delivery device secured to the rollstock machine with the second additive  
15 delivery device being spaced from the first additive delivery device. At least one first  
16 nozzle is formed in the first additive delivery device for delivering at least one additive  
17 into at least one of the cavities prior to each cavity receiving a food product and at least  
18 one second nozzle is formed in the second additive delivery device for delivering at least  
19 one additive onto the food product within the cavity.

20 The present invention additionally includes a method for applying additive to a  
21 food product on a rollstock machine. The method comprises forming at least one cavity  
22 from a forming film, applying a first additive to each cavity, loading a food product into  
23 each cavity, applying a second additive to each food product, and sealing a non-forming  
24 film to the forming film over the food product.

25 The present invention additionally includes an apparatus for treating food  
26 products with an additive. The apparatus comprises at least one cavity for receiving a  
27 food product and a first additive delivery device positioned above each cavity. First  
28 nozzle means are mounted to the first additive delivery device for applying a first additive  
29 to each cavity prior to receiving the food product. Preferably, a second additive delivery

1 device is positioned above each cavity with second nozzle means mounted to the second  
2 additive delivery device for applying a second additive to the food product within each  
3 cavity.

4

5 **BRIEF DESCRIPTION OF THE DRAWINGS**

6 FIG. 1 is a perspective view illustrating an additive delivery system, constructed  
7 in accordance with the present invention, mounted on a rollstock machine for applying an  
8 additive to a food product;

9 FIG. 2. is an elevational side view illustrating the additive delivery system of FIG.  
10 1, constructed in accordance with the present invention, mounted on another type of  
11 rollstock machine;

12 FIG. 3 is a top schematic view illustrating the additive delivery system of FIG. 1,  
13 constructed in accordance with the present invention;

14 FIG. 4 is a side schematic view illustrating the additive delivery system of FIG. 1,  
15 constructed in accordance with the present invention, with additive being applied through  
16 spray nozzles prior to loading of the food product;

17 FIG. 5 is another side schematic view illustrating the additive delivery system of  
18 FIG. 1, constructed in accordance with the present invention, with additive being applied  
19 only through certain predetermined spray nozzles; and

20 FIG. 6 is another top schematic view illustrating the additive delivery system of  
21 FIG. 1, constructed in accordance with the present invention.

22

23 **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

24 As illustrated in FIGS. 1 and 2, the present invention is an additive delivery  
25 system, indicated generally at 10, for rollstock machines 12. The additive delivery system  
26 10 of the present invention allows a food processor or other food packager to introduce an  
27 additive 14 (as illustrated in FIG. 3) to a food product 16 (as illustrated in FIG. 3) prior to  
28 packaging and cooking of the food product 16 without having to unpackage and

1 repackage the food product 16 prior to shipping of the food product to the wholesaler,  
2 retailer, or consumer.

3 In brief, the rollstock machine 12 includes a conveyor system 18 between a  
4 forming film supply 20 and a covering film supply 22. As the conveyor system 18 moves  
5 in a predetermined direction, as indicated by the arrows in FIGS. 3 and 6, the forming  
6 film 20 is applied on top of the conveyor system 18 to form a plurality of cavities 24, as  
7 illustrated in FIG. 4. The cavities 24 are formed in rows along the conveyor system 18 to  
8 receive the food products 16, as illustrated in FIG. 3. First additives 14a are added to  
9 each cavity 24 from the additive delivery system 10 with the food processor then loading  
10 the desired food product 16 into each cavity 24 as the food product moves along the  
11 conveyor system 18. Second additives 14b are then added directly to the food product 16  
12 from the additive delivery system 10. It should be noted, as will be described in further  
13 detail below, the first additive 14a and the second additive 14b can be the same additive  
14 or different additives 14 depending on the desires of the food processor. The covering  
15 film 22 is then applied over the treated food product 16 with the covering film 22 being  
16 sealed to the forming film 20 thereby packaging the food product 16 between the forming  
17 film 20 and the covering film 22.

18 The additive delivery system 10 of the present invention will now be described in  
19 detail. As mentioned above, the additive delivery system 10 allows the food processor to  
20 apply an additive 14, e.g., liquid smoke, other flavors, or coloring agents to the cavities  
21 24 created by the forming film 20 and/or the food product 16 prior to cooking and/or  
22 shipping the food product 16. In a preferred embodiment, as illustrated in FIG. 4, the  
23 additive delivery system 10 includes a first additive delivery device 26 and a second  
24 additive delivery device 28. The first additive delivery device 26 is preferably mounted  
25 to the rollstock machine 12 in a position prior to a food loading area for introducing the  
26 first additive 14a directly to each cavity 24. The second additive delivery device 28 is  
27 preferably mounted to the rollstock machine 12 subsequent to the food loading area for  
28 introducing the second additive 14b directly to the food product 16. The first additive  
29 delivery device 26 and the second additive delivery device 28 device are preferably

1 mounted directly to the rollstock machine 12 by a plurality of bolts 29 or the like although  
2 any type mounting means for mounting the first additive delivery device 26 and the  
3 second additive delivery device 28 to the rollstock machine 12 are within the scope of the  
4 present invention.

5 It should be noted that the additive delivery system 10, including the first additive  
6 delivery device 26 and second additive delivery device 28, can be affixed to any type of  
7 rollstock machine 12 for introducing the additives 14 such as flavorings and seasoning in  
8 powder and/or liquid forms which are dispensed by air and/or water pressure, light  
9 impulse or electrostatic charge, etc. The additive delivery system 10 is adjustable for all  
10 sizes of rollstock machines 12 and can include adapters for accommodating any particular  
11 rollstock machine 12. The means for delivery of the additives through the additive  
12 delivery system 10, i.e., the first additive delivery device 26 and the second additive  
13 delivery device 28 will be described in further detail immediately below.

14 The first additive delivery device 26 and the second additive delivery device 28  
15 each include at least one spray nozzle 30 with each spray nozzle 30 connected to an  
16 additive supply (not shown) by a flexible pipe or hose 32. As illustrated in FIG. 4, the  
17 flexible pipe or hose 32 delivers the first additives 14a to the first additive delivery device  
18 26 and the second additives 14b to the second delivery device 28 from the additive supply  
19 to a product collection area 34 mounted to both the first additive delivery device 26 and  
20 the second delivery device 28 for mixing the additives 14a, 14b in a desired manner prior  
21 to application to the cavities 24 and the food product 16. From the product collection  
22 area 34, the additives 14a, 14b are delivered to a high-pressure delivery canal 36 on both  
23 the first additive delivery device 26 and the second additive delivery device 28 for  
24 dispensing the additives 14a, 14b through the spray nozzles 30. As mentioned above,  
25 each high pressure delivery canal 36 is pressurized by any method including, but not  
26 limited to, water pressure, air pressure, light impulse, electrostatic charge, etc., for  
27 dispensing the additives 14a, 14b through the spray nozzles 30 into each cavity 24 and/or  
28 onto the food product 16.

1        It should be noted that, preferably, both the first additive delivery device 26 and  
2        the second additive delivery device 28 have a plurality of spray nozzles 30 to introduce  
3        the first additive 14a and the second additive 14b, respectively, to each cavity 24 and each  
4        food product 16, respectively, on the rollstock machine 12. Furthermore, all spray  
5        nozzles 30 can introduce the same additive 14, some of the spray nozzles 30 can be  
6        closed in order to run multiple different food products 16 simultaneously with and  
7        without additives 14 added, or different additives 14 can be applied to different food  
8        products 16 through different spray nozzles 30 to allow multiple different food products  
9        16 in any given cavity 24 to have different tastes and/or colors.

10       As illustrated in FIG. 6, the additive delivery system 10 of the present invention  
11      further includes a meter control panel 38 to control operation of the first additive delivery  
12      device 26 and the second additive delivery device 28. The meter control panel 38 will  
13      interconnect with the computer control panel 40 of the rollstock machine 12 via wires 39  
14      or the like for dispensing the additives 14 in accordance with the cycling of the rollstock  
15      machine. The meter control panel 38 will measure and dispense the appropriate  
16      predetermined amount of additive 14 and maintain records of all additives 14 passing  
17      through the additive delivery system 10.

18       The operation of the additive delivery system 10, including the first additive  
19      delivery device 26 and the second additive delivery device 28, will now be described in  
20      detail. A person skilled in the art will understand that the description of the operation of  
21      the additive delivery system 10 described below is only one manner of operation and that  
22      other manners of operation are within the scope of the present invention.

23       As the forming film 20 is applied to the conveyor system 18 of the rollstock  
24      machine 12, the cavities 24 are formed for receiving the food product 16. Prior to  
25      receiving the food product 16, the first additives 14a are applied from the first additive  
26      delivery device 26 into the cavities 24 within a predetermined number or all of the  
27      cavities 24. Once the desired first additives 14a are applied into the cavities 24, the food  
28      processor loads the food product 16 directly into the cavities 24. Then, the second  
29      additive 14b is applied directly to the food product 16 directly from the second additive

1 delivery device 28. The covering film 22 is then applied over the food product 16 and  
2 sealed to the forming film 20. The packaged, seasoned food product 16 can then be sent  
3 to the ovens for cooking or shipped directly to the consumer. There is no need to  
4 unpackage and repackage the food products 16 after cooking in order to cold smoke,  
5 and/or add the appropriate colorings, seasonings, and/or flavorings.

6 The additive 14 of the additive delivery system 10 of the present invention can be  
7 applied by a food adhesive or some other contact agent to allow the additive 14 to adhere  
8 to the inside of the forming film 20 and the covering film 22, when desired.

9 The additive delivery system 10 of the present invention allows a food processor  
10 to package and cook food products 16 with a desired flavor and/or coloring without  
11 having to unpackage the packaged food product 16 and handle the food product 16 after  
12 cooking. This allows substantially reduced processing times thereby reducing costs to the  
13 food processor and the consumer. Furthermore, the additive delivery system 10 can be  
14 attached to any type of rollstock machine 12 without affecting the normal and customary  
15 operation of the rollstock machine 12.

16 The foregoing exemplary descriptions and the illustrative preferred embodiments  
17 of the present invention have been explained in the drawings and described in detail, with  
18 varying modifications and alternative embodiments being taught. While the invention  
19 has been so shown, described and illustrated, it should be understood by those skilled in  
20 the art that equivalent changes in form and detail may be made therein without departing  
21 from the true spirit and scope of the invention, and that the scope of the present invention  
22 is to be limited only to the claims except as precluded by the prior art. Moreover, the  
23 invention as disclosed herein, may be suitably practiced in the absence of the specific  
24 elements which are disclosed herein.

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